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Versatile DA103-217 Solves Challenging Installations Requirements

Introduction

The Altinex DA103-217 Line Driver/Receiver was designed to address many common difficulties encountered by AV designers during AV systems installation. These difficulties include: smearing video, unstable sync, low image contrast, and mismatched resolution between a laptop and a display. With its extremely small size, the DA103-217 fits into small spaces as well as behind any wall mounted LCD display. The DA103-217 comes with a short VGA cable and a low profile external power supply that takes space similar to that of a regular power cord.

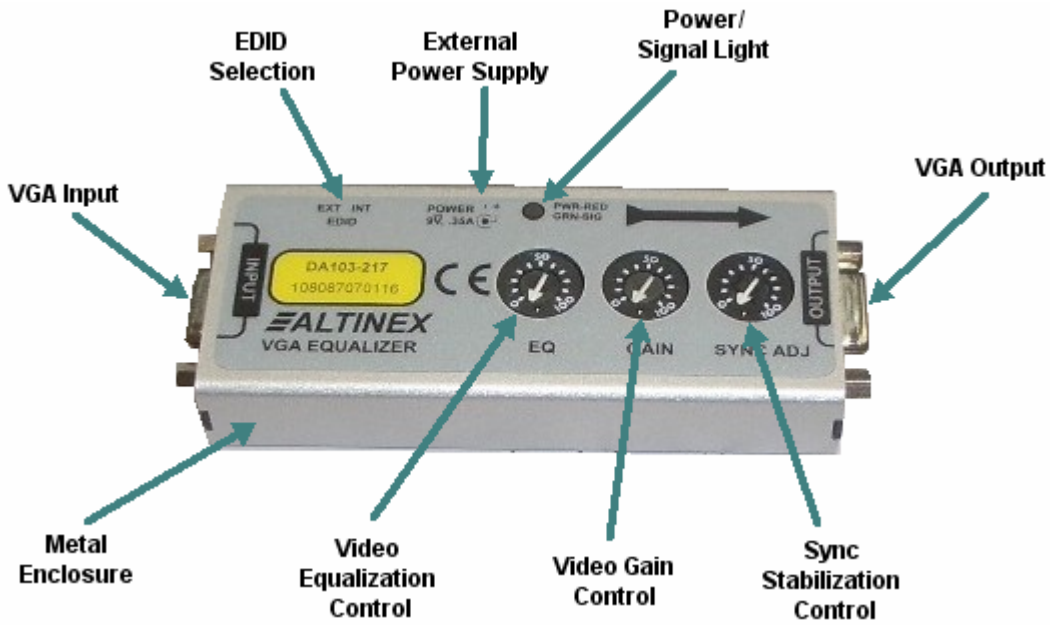

Figure 1. The DA103-217 VGA line driver and receiver

Features and Application

The DA103-217 can be used as a VGA line driver or a VGA line receiver. When used as a line driver, the DA103-217 will amplify video and sync signals and transmit them more than 150ft over VGA coaxial cable maintaining 1600 x 1200 resolution. Individual adjustments allow users to improve image quality and compensate for decreased contrast level.

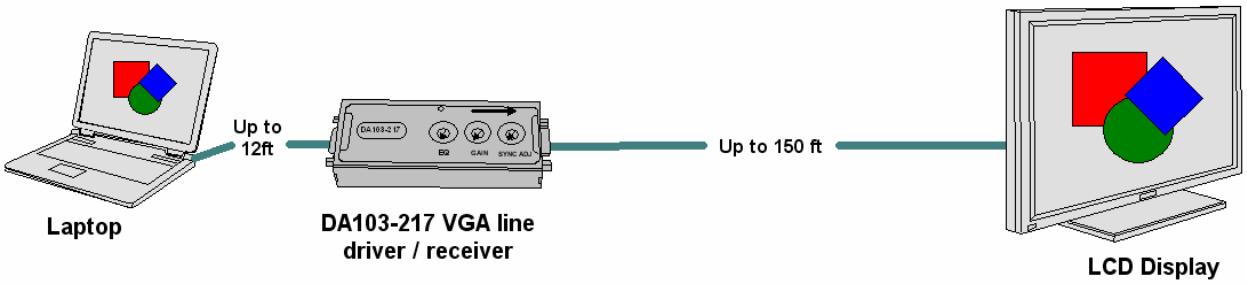

Figure 2. Using the DA103-217 as line driver

In addition, the DA103-217 has circuitry to buffer EDID (Extended Display Identification Data) signals from a computer and will transmit them 150ft to a display. Without the buffer, these signals can be transmitted only 25ft, thus losing the monitor's information for longer cable lengths. By buffering EDID signals inside the DA103-217, a laptop connected to a display is able to properly read the monitor's resolution and adjust its video card for the correct display format and resolution. There may still be some limitations for older video cards that are not able to display high definition resolution.

The DA103-217 is ideally suited to be located under a tabletop interconnect J-Box. In many cases, tabletop J-boxes require video signal buffering for long cable runs. With its small size, the DA103-217 fits neatly under a table for a trouble free installation.

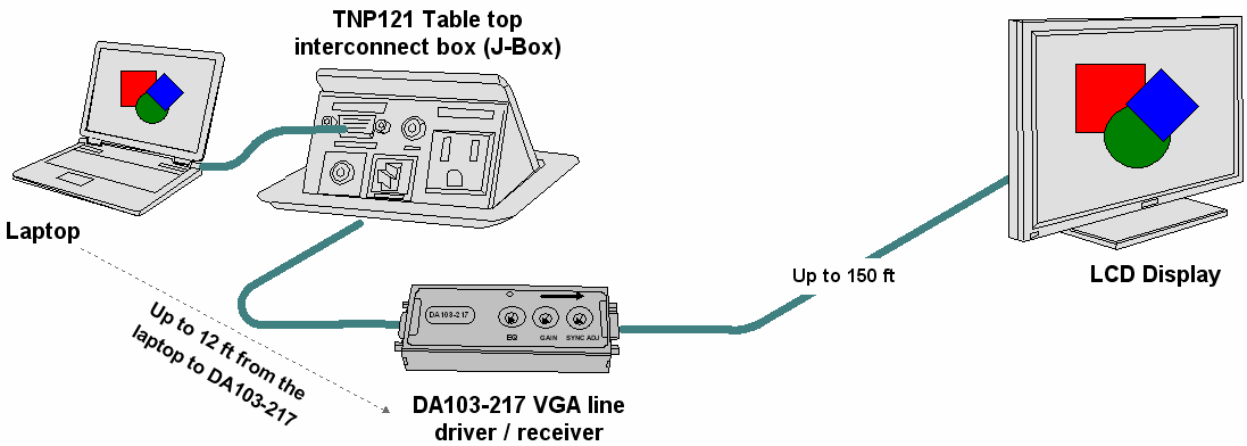

Figure 3. Installing the DA103-217 with a tabletop J-Box

The DA103-217 also has built in EDID (Extended Display Identification Data) emulator circuitry and is able to emulate any monitor or projector. In many cases when a laptop is connected through AV switchers and amplifiers, the EDID information from a monitor is not transmitted back to the laptop. Without this information, the laptop defaults to its native resolution and may not be compatible with the display used. Since different laptop manufacturers implement EDID slightly differently, the output from laptops will vary if EDID is not available. When EDID information is available, then a laptop will adjust its video card output to be compatible with the display's resolution.

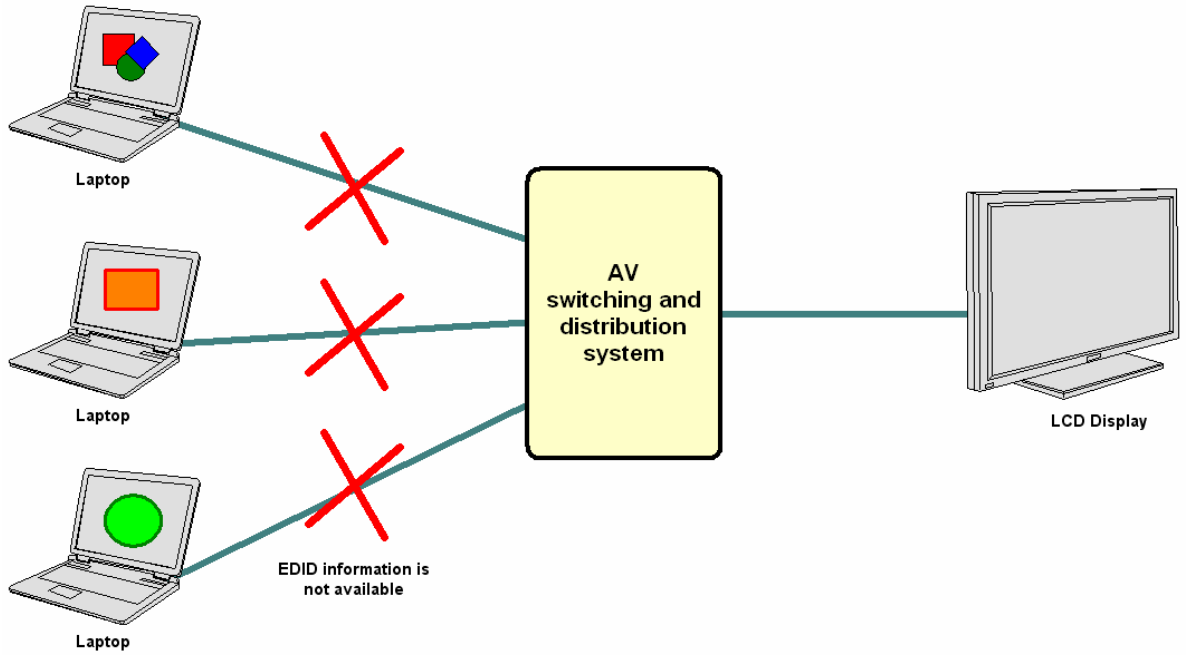

Figure 4. EDID signals are not available through the AV System

With the DA103-217 and the EDID Blaster software (Developed by Altinex), the EDID information from a display can be read using a laptop and then programmed to the internal line driver's EDID emulator. Once programmed, the DA103-217 will emulate the display and provide the correct information about the displays' resolution to a laptop and facilitate the proper video output from the laptop.

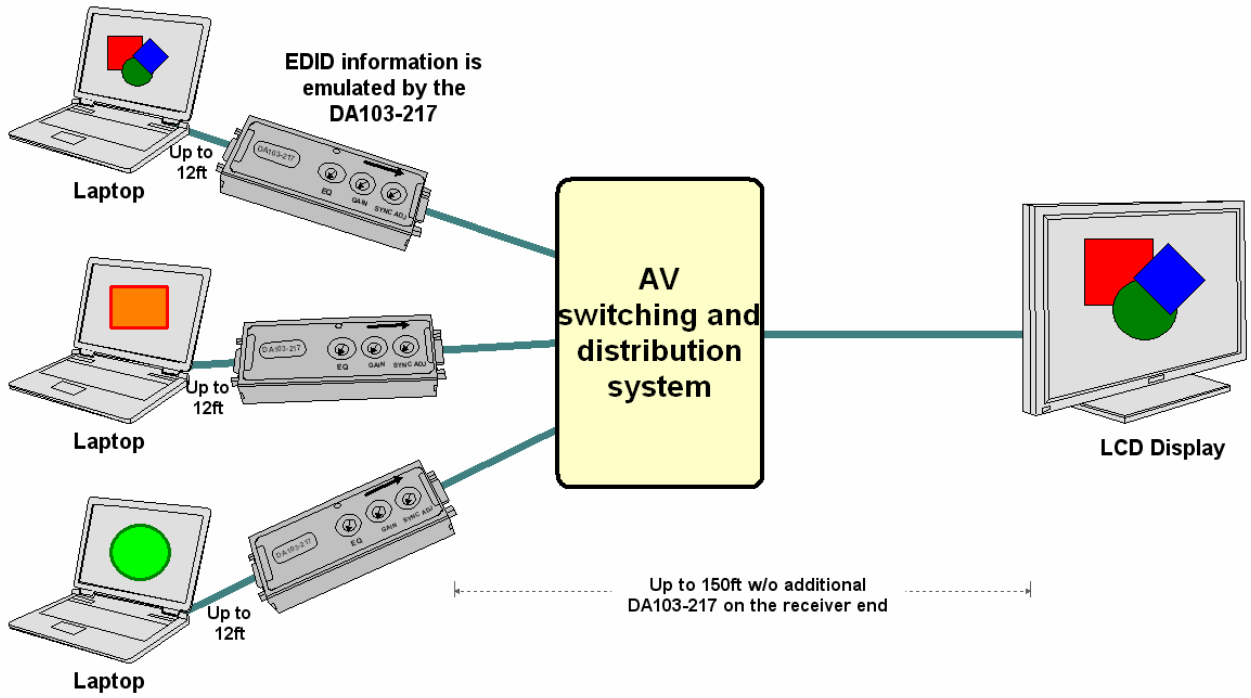

Figure 5. The DA103-217 emulates the LCD display to provide resolution information to a laptop

The DA103-217 has a powerful equalization circuitry and can recover degraded VGA signal as far as 250 ft away when standard VGA cable is used. When connected at the end of a cable, the DA103-217 can significantly improve image contrast and sharpness. When VGA signal travels through coaxial cable, the signal gets degraded due to the capacitance and resistance of the cable. With every foot of cable, the quality of the signal decreases slightly.

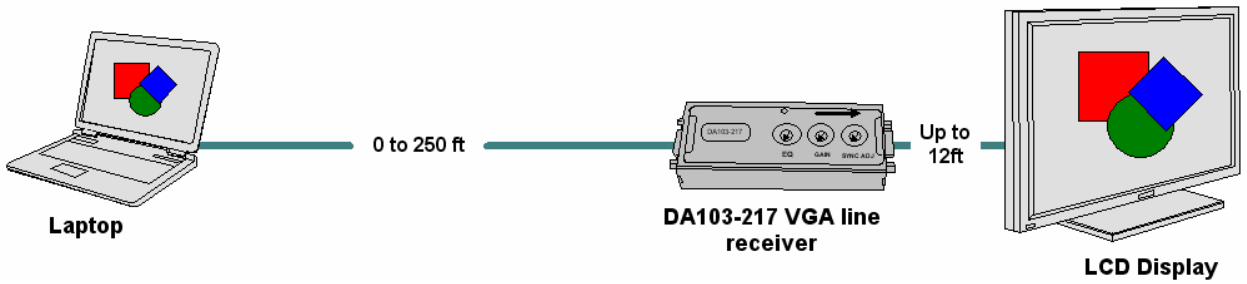

Figure 6. The DA103-217 can improve image quality 250 ft away

The DA103-217 has adjustable circuitry to improve signal quality and compensate for the losses in the coaxial cables. This is done using (EQ) equalization control for image sharpness and (GAIN) gain control for image contrast. With a wide range of adjustment, the DA103-217 can restore VGA signals that have been degraded by 30% due to cable length or multiple cable interconnections using gender benders.

In addition to video quality improvement, the DA103-217 has a built in AGC (Automatic Gain Control) for horizontal and vertical sync signals that automatically adjusts to any sync signal from 1volt peak to peak to 5 volt peak to peak amplitude. With this feature, it is virtually assured that DA103-217 will process any type of sync signal coming in and will convert it to a proper format for a display or a projector.

Sync adjustment control allows selecting the most stable portion of the sync signal for recovery. When the sync signal travels more than 25ft, it gets distorted due to improper sync termination and signal reflections. Most of the sync signals have an output impedance of 10-20 ohms, but the cable used for sync signals is 75 or 300 ohms. This cable impedance mismatch creates reflections and sync distortions that results in unstable image, jitter, or loss of image completely.

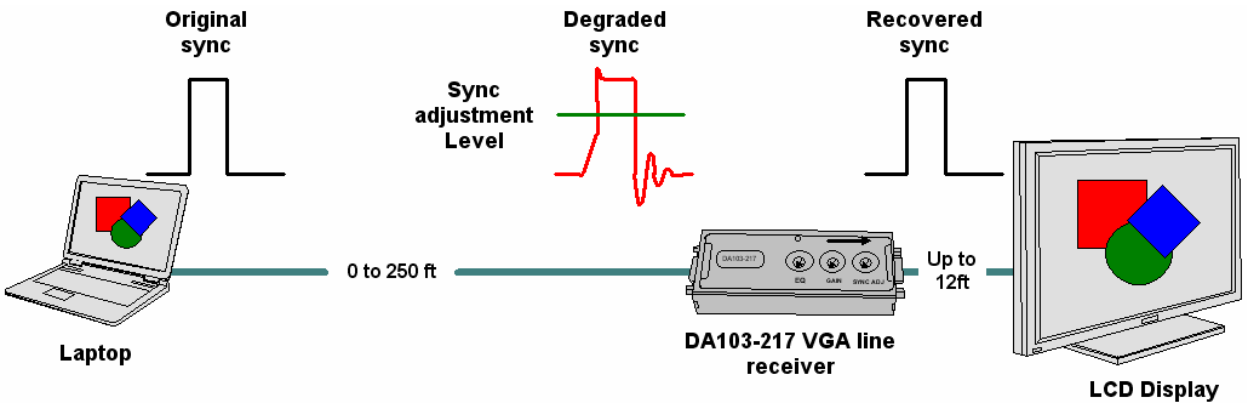

Figure 7. Automatic Gain control assures stable sync for a display

The DA103-217 provides the user with (SYNC ADJ) sync adjustment control that allows setting

the sync threshold from 0 to 100% of the sync amplitude. This adjustment level guarantees accurate sync recovery for the longest cable length.

For extra long cable lengths, it is possible to use two DA103-217s to extend the distance to over 400ft. When two units are interconnected, EQ and GAIN controls should be set to 0 and the SYNC ADJ control should be set to 50%. Initially, only the receiver should be adjusted until there is no more adjustment range. After that, the transmitter's EQ and GAIN can be adjusted to provide additional improvement in the image quality. Transmitter SYNC ADJ should be always set to 50%, while the receiver's SYNC ADJ should be set for the best stable image.

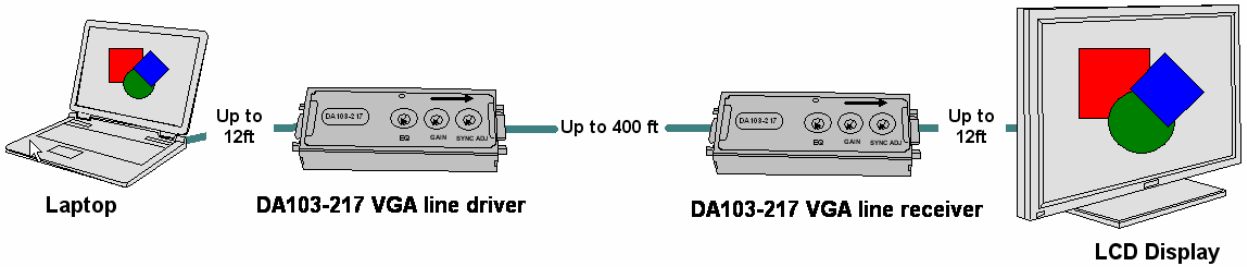

Figure 8. Extending VGA cable length using two DA103-217s

In real life applications, the DA103-217 will significantly improve the displayed image sharpness and contrast. Figure 9 shows 250ft of a standard VGA cable without equalization and gain control. All of the text is smeared to the right as evidence of very severe signal degradation.

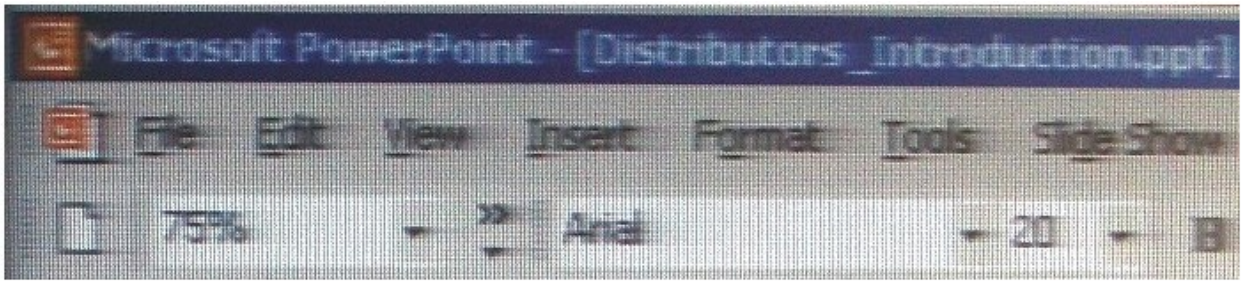

Figure 9. 250ft of coaxial cable without DA103-217

After properly adjusting the DA103-217 located next to a monitor, the image quality has been improved dramatically by removing ghosting and making text edges sharp and crisp. The gain was also adjusted to bring image contrast back to its original level. The sync control was set to 50% for this test.

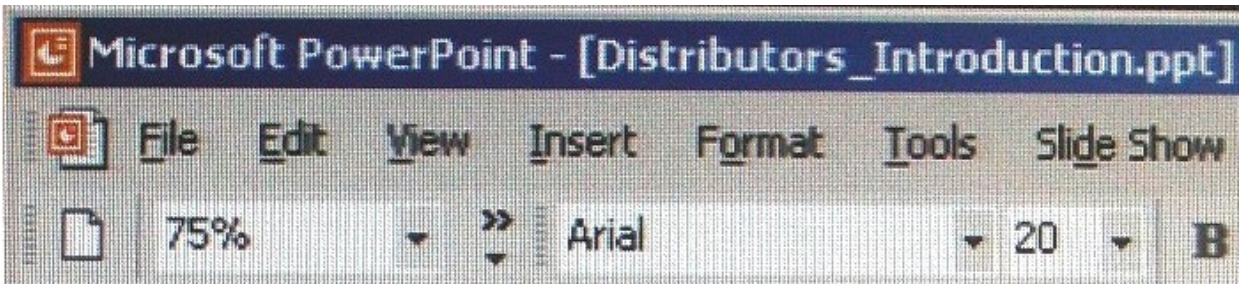

Figure 10. 250ft of coaxial cable after equalization with DA103-217

Conclusion

The Altinex DA103-217 is a versatile AV tool that is easy to use and provides a wealth of capabilities to resolve many common challenges during a typical AV system installation. With separate equalization and gain controls, this unit provides great flexibility in determining just the right amount of adjustment required. Automatic gain control for sync signals helps the user to zero in on a stable portion of the sync for rock steady images. In addition, its ability to transmit EDID over 150ft and to provide the local display emulation makes the DA103-217 an excellent choice for every AV installation.